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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/520,620 | 01/10/2005 | Mitsuhiro Matsuzaki | 2004-2043A | 2558 |
| 513 | 7590 | 08/31/2006 | EXAMINER | |
| WENDEROTH, LIND & PONACK, L.L.P. | | | TRUONG, DUC | |
| 2033 K STREET N. W. | | | ART UNIT | |
| SUITE 800 | | | PAPER NUMBER | |
| WASHINGTON, DC 20006-1021 | | | 1711 | |

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/520,620 | Applicant(s) MATSUZAKI ET AL. | |
| | Examiner Duc Truong | Art Unit 1711 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>011005 and 041206</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP 0436120 of record on 1449.

The reference discloses a process for recovering poly(arylene sulfide) from a mixture comprising a liquid phase poly(arylene sulfide) and a polar organic solvent wherein the liquid mixture is contacted by an amount of water as phase separation agent at least sufficient to effect or enhance a phase separation of the liquid phase poly(arylene sulfide) component from the polar organic solvent. The poly(arylene sulfide) resins recovered exhibit uniform particle size (see Abstract).

Note that at least in Example 1, the reference does disclose reactants and the steps of the process to form the product in that the cooling step is continued in the last step at 0.5 C/min, as required in claim 1.

The disclosure of the reference differs from the instant claims in that it neither disclose the use of a reflux condenser as a principal cooling means for the cooling nor the claimed conversion of the aromatic dihalide compound after forming prepolymer

However, the reference does disclose the cooling step of the process, and the polymerization in either batch or continuous operations (see col. 5, lines 32-33) in that the reflux condenser could be used in continuous process.

In view of this similarity, it would appear to be inherent that the claimed conversion of said aromatic dihalide and the reflux condenser must be considered inherent in the prior art.

Claims 1-4, 7-11, 15-22, 25-27 and 30-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP 0568366 or Kawakami of record on 1449.

The EP 0568366 reference discloses a process for producing polyarylene sulfide in that an alkali metal sulfide is reacted with a dihalogenated aromatic compound in an organic solvent containing water with a two step polymerization process, and in the second step, in order to form the liquid-liquid phase separation, it is permissible to add water---. After completion of the polymerization reaction, the reaction mixture is cooled with stirring (see Abstract; page 3, lines 25-49; page 4, lines 12-40).

Note that the first step and the second step have been disclosed at page 7, line 16 to page 8, line 20, and after completion of the second step, the resultant polymer is in the form of granules by cooling the reaction mixture at rate of 1 C/min with stirring (see page 11, lines 30-31).

The Kawakami reference discloses a process for producing granular polyarylene containing sulfide in which an alkali metal sulfide is reacted with a dihalogenated aromatic compound in an organic solvent containing water in two steps of the process and after completion of the second step, cooling the reaction mixture at a rate of 1 C/min (see col. 15, line 8) with stirring (see Abstract; col. 4, line 34 onto col. 5, line 12)

The disclosures of the references differ from the instant claims in that they neither disclose the claimed temperature range of max. system viscosity temperature nor the conversion molar ratio of the aromatic dihalide compound after forming a prepolymer.

However, the compositions disclosed by the references are prepared from reactants and under process conditions that are inclusive of the claimed reactants and conditions. In view of this similarity, said claimed temperature range of max. system viscosity temperature and the conversion molar ratio of said aromatic dihalide compound must be considered inherent in the prior art.

Claims 1-4, 7-11, 15-22, 25-27 and 30-33 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iwasaki et al of record on 1449.

The reference discloses a process for producing a granular PAS in a two steps of the process in that in the first step of the process the conversion of a dihalo aromatic compound charged reaches from 50-98 mol%, as required in claim 3; (2) a two phase separated polymerization step of adding water to the reaction mixture without separating the prepolymer from the reaction system,

(i) heating and maintaining the reaction system for at least 10 min at a temperature ranges from 257-290 C while stirring;

(ii) lowering the temperature of the reaction system and maintaining the reaction system for at least two hours at a temperature ranges form 220 –250 C while stirring (see col. 4, line 64 to col. 5, line 29; col. 8, line 40 et seq. and in the examples)

The disclosure of the reference differs form the instant claims in that it does not disclose the claimed cooling speed at a temperature range after step (2). However, the reference does disclose the temperatures dropped (from 257-290 to 220-250 C) during reaction time (2 hours). Therefore, the claimed cooling speed in a temperature range must be considered inherent in the prior art.

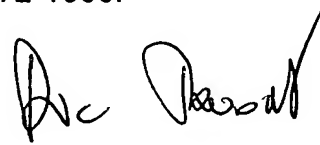
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Truong whose telephone number is 571-272-1081. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Duc Truong", with a stylized flourish at the end.

DUCTRUONG
PRIMARY EXAMINER